GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[x] ORIGINAL [ ] REVISION NO. _____

Project No. E-24-651 (E-24-352 c/s) DATE 2/15/82

Project Director: Michael L. Pinedo School/Lab ISyE

Sponsor: NSF

Washington, DC 20550

Type Agreement: Grant No. ECS-8115344

Award Period: From 1/15/82 To 6/30/84 (Performance) 9/30/84 (Reports)

Sponsor Amount: $44,000 Contracted through:

Cost Sharing: $ 8,088 (E-24-352) GTRI/GIT

Title: Stochastic Scheduling

ADMINISTRATIVE DATA OCA Contact Linda H. Bowman x4820

1) Sponsor Technical Contact:

Abraham H. Haddard
NSF
Washington, DC 20550

(202) 357-9618

2) Sponsor Admin/Contractual Matters:

Lee A. DeHerrera
NSF
Washington, DC 20550

(202) 357-9602

Defense Priority Rating: none Security Classification: none

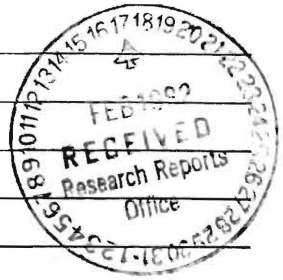
RESTRICTIONS

See Attached NSF Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval – Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with GIT

COMMENTS:



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Administrative Coordinator
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Accounting
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~~Reports Coordinator (OCA)~~
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Library
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Computer Input
Project File
Other _____

FORM OCA 4:781

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION SHEET

SR-458

Date 4/27/83

Project Title: Stochastic Scheduling

Project No: E-24-651 (E-24-352 cost sharing)

Project Director: Dr. Michael Pinedo

Sponsor: NSF

Effective Termination Date: 4/30/83

Clearance of Accounting Charges: 4/30/83

Grant/Contract Closeout Actions Remaining:

- [ ] Final Invoice and Closing Documents
- [x] Final ~~Fiscal Report~~ Acctg. Report FCTR
- [x] Final Report of Inventions
- [x] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

Assigned to: ISyE (School/~~Laboratory~~)

COPIES TO:

Administrative Coordinator	Research Security Services	EES Public Relations (2)
Research Property Management	~~Reports Coordinator (OCA)~~	Computer Input
Accounting	Legal Services (OCA)	Project File
Procurement/EES Supply Services	Library	Other _____

FORM

NATIONAL SCIENCE FOUNDATION
Washington, D.C. 20550

FINAL PROJECT REPORT
NSF FORM 98A

PLEASE READ INSTRUCTIONS ON REVERSE BEFORE COMPLETING

PART I–PROJECT IDENTIFICATION INFORMATION

1. Institution and Address	2. NSF Program	3. NSF Award Number
Georgia Institute of Technology Columbia University	Systems Theory & Oper.Res.	ECS-8115344
	4. Award Period From 7/1/81 To 6/30/84	5. Cumulative Award Amount 44,000

6. Project Title

Stochastic Scheduling

PART II–SUMMARY OF COMPLETED PROJECT *(FOR PUBLIC USE)*

This research concerns optimization problems in probabilistic scheduling. In these models it is assumed that there are n jobs, which have to undergo processing on m machines which are set up in a given way. The actual processing times of the jobs are assumed not to be known in advance. However, the distributions of these processing times, on the other hand, are assumed to be known in advance. That is, the type of the distribution of the processing time of a job (e.g., exponential or deterministic) is known in advance and its parameters (e.g., mean and variance) is known in advance.

Based on these distributions and their parameters it turns out to be possible to determine scheduling policies that minimize given objective functions, for example, the expected completion time of the last job that leaves the system or the sum of the expected waiting times of all of the jobs that enter the system.

Various kinds of machine environments are considered: machines in parallel, where a job has to be processed on one and only one of the machines (it does not matter which one), machines in series, where a job has to be processed on each one of the machines and the decision-maker has to decide in advance in what order the jobs have to traverse the system, and more complicated job shops.

The models considered in this research have wide application in job shop scheduling, in service delivery systems and in maintenance and reliability problems.

PART III–TECHNICAL INFORMATION *(FOR PROGRAM MANAGEMENT USE)*

1. ITEM *(Check appropriate blocks)*	NONE	ATTACHED	PREVIOUSLY FURNISHED	TO BE FURNISHED SEPARATELY TO PROGRAM	
				Check (✓)	Approx. Date
a. Abstracts of Theses				X	Jan. 1 1986
b. Publication Citations				X	
c. Data on Scientific Collaborators				X	
d. Information on Inventions	X				
e. Technical Description of Project and Results				X	
f. Other *(specify)*		X			

2. Principal Investigator/Project Director Name *(Typed)*	3. Principal Investigator/Project Director Signature	4. Date
Prof. Michael L. Pinedo		08/12/85

NSF Form 98A (3-83) Supersedes All Previous Editions

Form Approved OMB No. 3145-0058

"Minimizing the Makespan in a Stochastic Flowshop," Operations Research, (1982), Vol. 30, No. 1, pp. 148-162.

"On the Computational Complexity of Stochastic Scheduling Problems," Deterministic and Stochastic Scheduling, M. A. H. Dempster, et al. (eds.), D. Reidel Publishing Company, (1982) pp. 355-365.

"Stochastic Shop Scheduling: A Survey" (with L. Schrage), Deterministic and Stochastic Scheduling, M. A. H. Dempster, et al. (eds.), D. Reidel Publishing Company, (1982) pp. 181-196.

"Minimizing the Makespan in Stochastic Open Shops" (with S. Ross), Advances in Applied Probability, (1982) Vol. 14, No. 4, pp. 898-911.

"On the Optimal Order of Stations in Tandem Queues" Applied Probability Computer Science: The Interface, eds. Disney and Ott, Birkhauser, Boston, (1982) pp. 307-325.

"Stochastic Scheduling with Release Dates and Due Dates," Operations Research, (1983) Vol. 31, No. 3, pp. 559-572.

"Scheduling Jobs with Exponentially Distributed Processing Times on Two Machines with Resource Constraints" (with G. Weiss) Management Science, (1984) pp. 883-889.

"On Flow Time and Due Dates in Stochastic Open Shops," European Journal of Operations Research, (1984) pp. 81-85.